Amendment to the Claims:

Please amend the claims as follows:

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

Claims 1 to 30 (canceled)

Claim 31 (currently amended): A method of producing a polypeptide polymer comprising the steps of:

(a) providing a plurality of monomeric polypeptides and at least one divalent cation, wherein the monomer polypeptides are capable of self-assembly in the presence of a divalent cation; and

(b) (i) polymerizing the monomeric polypeptides through a self-assembly process in the presence of at least one divalent cation, or, (ii) polymerizing the monomeric polypeptides in the presence of a template molecule, under conditions wherein the monomeric polypeptides self-assemble, thereby producing a polypeptide polymer,

wherein each monomeric polypeptide of the plurality of monomeric polypeptides have either (a) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, or, (b) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, having at least one conservative substitution,

and at least one monomeric polypeptide of the plurality of monomeric polypeptides includes a modification comprising attachment of a non-monomeric polypeptide ~~an enzyme, attachment of a nucleotide or attachment of a nucleotide derivative, or attachment of a lipid or attachment of a lipid derivative, or attachment of a targeting molecule, or attachment of a vector~~.

Claim 32 and 33 (canceled)

Claim 34 (previously presented): The method of claim 31, wherein at least one of the plurality of monomeric polypeptides is made by a method comprising the steps of:

preparing a vector comprising a nucleic acid, wherein the nucleic acid encodes the monomeric polypeptide;

inserting the vector into a host cell;

growing the host cell in a suitable culture to express the nucleic acid to form the polypeptide; and

isolating the formed monomeric polypeptide from the host cell.

Claim 35 (previously presented): The method of claim 31, wherein the step of polymerizing the monomeric polypeptides further comprises the steps of:

dissolving the plurality of monomeric polypeptides in a solution; and

adding a template molecule and an alkaline earth metal ion to the solution.

Claims 36 to 113 (canceled)

Claim 114 (currently amended): The method of claim 211 [[34]], wherein the vector is selected from the group consisting of viral vectors, plasmid vectors, phage vectors, phagemid vectors, cosmids, fosmids, bacteriophages, artificial chromosomes, adenovirus vectors, retroviral vectors, and adeno-associated vectors.

Claim 115 (previously presented): The method of claim 34, wherein the host is selected from the group consisting of prokaryotes, eukaryotes, funguses, yeasts, plants and metabolically rich hosts.

Claims 116 to 131 (canceled)

Claim 132 (previously presented): The method of claim 31, wherein the monomeric polypeptides have a molecular weight of more than 5,000 daltons.

Claim 133 (previously presented): The method of claim 132, wherein the monomeric polypeptides have a molecular weight of more than 10,000 daltons.

Claim 134 (previously presented): The method of claim 31, wherein the monomeric polypeptides polymerize to form a hollow tube, a tubule, a micelle or a molecular sieve.

Claim 135 (previously presented): The method of claim 134, wherein the hollow tube has approximately a 25 nm outer diameter and a 20 nm inner diameter.

Claim 136 (previously presented): The method of claim 31, wherein the monomeric polypeptides are polymerized in the presence of a divalent cation and a template molecule.

Claim 137 (previously presented): The method of claim 31, wherein the template molecule comprises a plasmid, a phage, a cosmid, a phagemid, a virus or a portion of a virus.

Claim 138 (previously presented): The method of claim 137, wherein the virus comprises a retrovirus, a parainfluenzavirus, a herpesvirus, a reovirus or a paramyxovirus.

Claim 139 (previously presented): The method of claim 137, wherein the portion of a virus comprises a coat protein, a spike glycoprotein or a capsid protein.

Claim 140 (previously presented): The method of claim 31, wherein the plurality of monomeric polypeptides are polymerized in the presence of at least one divalent cation selected from the group consisting of Ca^{2+}, Mg^{2+}, Cu^{2+}, Zn^{2+}, Sr^{2+}, Ni^{2+}, Mn^{2+} and Fe^{2+}.

Claim 141 (previously presented): The method of claim 31, wherein the plurality of monomeric polypeptides are polymerized in the presence of Ca^{2+} and Mg^{2+}.

Claim 142 (previously presented): The method of claim 31, wherein the step of polymerizing the monomeric polypeptides further comprises the step of dissolving the monomeric polypeptides in an aqueous solution.

Claim 143 (previously presented): The method of claim 31, wherein the template molecule is prepared by fragmenting or shearing of a suspension of a polymer.

Claim 144 (previously presented): The method of claim 31, wherein the monomeric polypeptides interact with each other by pairing, bundling, entangling or electrostatic cross-linking, thereby generating paired polymers, bundled polymers, entangled polymers, cross-linked polymers or an interconnected network of polymers.

Claim 145 (previously presented): The method of claim 31, further comprising providing a therapeutic agent or a drug molecule and adding the therapeutic agent or drug molecule to the polymerization step, thereby generating a therapeutic agent or drug molecule encapsulated by the polymers.

Claim 146 (previously presented): The method of claim 145, wherein the therapeutic agent or drug molecule is added to the polymerization step.

Claim 147 (previously presented): The method of claim 146, further comprising capping the partially formed polymer using a capping unit.

Claim 148 (previously presented): The method of claim 147, wherein the capping unit comprises a polypeptide monomer.

Claim 149 (previously presented): The method of claim 146, wherein the therapeutic agent or drug encapsulating step is carried out by mixing the polymer and the therapeutic agent or drug molecule together in a solution such that the therapeutic agent or drug molecule can permeate inside the polymer.

Claim 150 (previously presented): The method of claim 145, further comprising attaching a targeting molecule, or an additional targeting molecule if a targeting molecule is already present, or a vector, or an additional vector if a vector is already present, to the therapeutic agent- or drug-loaded polymer during the encapsulation process or after the completion of the encapsulation process.

Claim 151 (previously presented): The method of claim 145, further comprising using lipids or lipid molecules during the encapsulation process.

Claim 152 (previously presented): The method of claim 31, further comprising attaching the polymer to a hydrogel.

Claim 153 (previously presented): The method of claim 152, wherein the hydrogel comprises a three-dimensional structural network for a biochip.

Claim 154 (previously presented): The method of claim 31, wherein the monomeric polypeptide has an amino acid sequence as set forth in SEQ ID NO:2.

Claims 155 to 188 (canceled)

Claim 189 (previously presented): The method of claim 31, wherein the conservative amino acid substitution comprises substituting one amino acid for another of the same class.

Claim 190 (previously presented): The method of claim 189, wherein the conservative amino acid substitution comprises substitution of one hydrophobic amino acid for another, or substitution of one polar amino acid for another.

Claim 191 (previously presented): The method of claim 190, wherein the conservative amino acid substitution comprises substitution of isoleucine, valine, leucine or methionine, for another hydrophobic amino acid.

Claim 192 (previously presented): The method of claim 190, wherein the conservative amino acid substitution comprises substitution of arginine for lysine, glutamic acid for aspartic acid or glutamine for asparagine.

Claim 193 (previously presented) The method of claim 31, wherein the polypeptide polymer is a nanoscale drug delivery vehicle.

Claim 194 (currently amended): The method of claim 31, wherein the polymer or at least one monomeric polypeptide further comprises an enzyme.

Claim 195 (currently amended): The method of claim 31, wherein the polymer or at least one monomeric polypeptide further comprises a nucleotide or a nucleotide derivative.

Claim 196 (currently amended): The method of claim 31, wherein the polymer or at least one monomeric polypeptide further comprises a lipid or a lipid derivative.

Claim 197 (currently amended): The method of claim 31, wherein the polymer or at least one monomeric polypeptide further comprises a vector or a targeting molecule.

Claim 198 (previously presented) The method of claim 197, wherein the vector or targeting molecule comprises an antibody.

Claim 199 (previously presented) The method of claim 197, wherein the vector or targeting molecule comprises an oligosaccharide.

Claim 200 (previously presented) The method of claim 197, wherein the vector or targeting molecule comprises a Morphatide™.

Claim 201 (currently amended):): The method of claim 211 [[31]], wherein the vector is a targeting vector.

Claim 202 (new): The method of claim 31, wherein the polymer or at least one non-monomeric polypeptide further comprises an enzyme, an antibody or a targeting molecule, or at least one non-monomeric polypeptide comprises a modification comprising an enzyme, an antibody or a targeting molecule.

Claim 203 (new): The method of claim 31, wherein the polymer or at least one non-monomeric polypeptide comprises a charged group.

Claim 204 (new): The method of claim 31, wherein the non-monomeric polypeptide is attached to a monomeric protein as a recombinant fusion protein.

Claim 205 (new): The method of claim 31, wherein the non-monomeric polypeptide is attached to a monomeric protein after polymerization.

Claim 206 (new): The method of claim 31, wherein the non-monomeric polypeptide is attached to a monomeric protein before polymerization.

Claim 207 (new): A method of producing a polypeptide polymer comprising the steps of:

(a) providing a plurality of monomeric polypeptides and at least one divalent cation, wherein the monomer polypeptides are capable of self-assembly in the presence of a divalent cation; and

(b) (i) polymerizing the monomeric polypeptides through a self-assembly process in the presence of at least one divalent cation, or, (ii) polymerizing the monomeric polypeptides in the presence of a template molecule, under conditions wherein the monomeric polypeptides self-assemble, thereby producing a polypeptide polymer,

wherein each monomeric polypeptide of the plurality of monomeric polypeptides have either (a) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, or, (b) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, having at least one conservative substitution,

and at least one monomeric polypeptide of the plurality of monomeric polypeptides includes a modification comprising attachment of a nucleotide or attachment of a nucleotide derivative.

Claim 208 (new): A method of producing a polypeptide polymer comprising the steps of:

(a) providing a plurality of monomeric polypeptides and at least one divalent cation, wherein the monomer polypeptides are capable of self-assembly in the presence of a divalent cation; and

(b) (i) polymerizing the monomeric polypeptides through a self-assembly process in the presence of at least one divalent cation, or, (ii) polymerizing the monomeric polypeptides in the presence of a template molecule, under conditions wherein the monomeric polypeptides self-assemble, thereby producing a polypeptide polymer,

wherein each monomeric polypeptide of the plurality of monomeric polypeptides have either (a) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, or, (b) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, having at least one conservative substitution,

and at least one monomeric polypeptide of the plurality of monomeric polypeptides is modified by attachment of a lipid or attachment of a lipid derivative.

Claim 209 (new): The method of claim 208, wherein the lipid comprises a polyethylene glycol.

Claim 210 (new): A method of producing a polypeptide polymer comprising the steps of:

(a) providing a plurality of monomeric polypeptides and at least one divalent cation, wherein the monomer polypeptides are capable of self-assembly in the presence of a divalent cation; and

(b) (i) polymerizing the monomeric polypeptides through a self-assembly process in the presence of at least one divalent cation, or, (ii) polymerizing the monomeric polypeptides in the presence of a template molecule, under conditions wherein the monomeric polypeptides self-assemble, thereby producing a polypeptide polymer,

wherein each monomeric polypeptide of the plurality of monomeric polypeptides have either (a) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID

NO:8, or SEQ ID NO:10, or, (b) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, having at least one conservative substitution,

and at least one monomeric polypeptide of the plurality of monomeric polypeptides is modified by attachment of a nucleic acid.

Claim 211 (new): The method of claim 210, wherein at least one monomeric polypeptide of the plurality of monomeric polypeptides is modified by attachment of a vector.

Claim 212 (new): A method of producing a polypeptide polymer comprising the steps of:

(a) providing a plurality of monomeric polypeptides and at least one divalent cation, wherein the monomer polypeptides are capable of self-assembly in the presence of a divalent cation; and

(b) (i) polymerizing the monomeric polypeptides through a self-assembly process in the presence of at least one divalent cation, or, (ii) polymerizing the monomeric polypeptides in the presence of a template molecule, under conditions wherein the monomeric polypeptides self-assemble, thereby producing a polypeptide polymer,

wherein each monomeric polypeptide of the plurality of monomeric polypeptides have either (a) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, or, (b) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, having at least one conservative substitution,

and at least one monomeric polypeptide of the plurality of monomeric polypeptides is modified by attachment of an oligosaccharide.

Claim 213 (new): A method of producing a polypeptide polymer comprising the steps of:

(a) providing a plurality of monomeric polypeptides and at least one divalent cation, wherein the monomer polypeptides are capable of self-assembly in the presence of a divalent cation; and

(b) (i) polymerizing the monomeric polypeptides through a self-assembly process in the presence of at least one divalent cation, or, (ii) polymerizing the monomeric polypeptides in the

presence of a template molecule, under conditions wherein the monomeric polypeptides self-assemble, thereby producing a polypeptide polymer,

wherein each monomeric polypeptide of the plurality of monomeric polypeptides have either (a) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, or, (b) an amino acid sequence as set forth in SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10, having at least one conservative substitution,

and at least one monomeric polypeptide of the plurality of monomeric polypeptides includes a modification comprising attachment of an enzyme.

Claim 214 (new): The method of claim 31, wherein a non-monomeric polypeptide is attached to one monomeric protein.

Claim 215 (new): The method of claim 31, wherein a non-monomeric polypeptide is attached to a plurality of monomeric proteins.